

***Robaloscion*, a new genus for *Sciaena wieneri* Sauvage, 1883 (Teleostei, Sciaenidae) from the southeastern Pacific, with clarification of the taxonomic status of *Sciaena starksi* Evermann & Radcliffe, 1917**

by

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Abstract. – A new genus, *Robaloscion* gen. nov., is described to include the Peruvian robalos: *Sciaena wieneri* Sauvage, 1883 and *Sciaena starksi* Evermann & Radcliffe, 1917, on the basis of all known specimens. The new genus is defined as a sciaenid with: a pair of horn-like appendages arising at the anterior extremity of the gas bladder; emarginate to lunate caudal fin; very elongate sagitta with a large, globose umbo on the outer face; small eye contained 10 to 17 times in head length. *Sciaena starksi* is treated as a junior synonym of *S. wieneri* based on examination of the type series of both species. *Robaloscion wieneri* is one of the largest sciaenids of the eastern Pacific, reaching a size of 1400 mm, and is distributed from northern Peru to northern Chile.

Résumé. – *Robaloscion*, un nouveau genre pour *Sciaena wieneri* Sauvage, 1883 (Teleostei, Sciaenidae) du Pacifique sud-est, avec clarification du statut taxinomique de *Sciaena starksi* Evermann & Radcliffe, 1917.

Un nouveau genre, *Robaloscion* gen. nov., est décrit pour inclure les robalos péruviens : *Sciaena wieneri* Sauvage, 1883 et *Sciaena starksi* Evermann & Radcliffe, 1917, sur la base de tous les spécimens connus. Le nouveau genre est défini comme suit : espèce de Sciaenidae avec appendices en forme de corne apparaissant à l'extrémité antérieure de la vessie natatoire ; nageoire caudale émarginée à semi-lunaire ; otolithe sagitta très allongée avec un gros et globuleux umbo sur la face externe ; œil petit, contenu 10 à 17 fois dans la longueur de la tête. Après examen des séries types des deux espèces, *S. starksi* est traité comme un synonyme junior de *S. wieneri*. *Robaloscion wieneri* est l'une des plus grosses courbines du Pacifique oriental, atteignant une taille de 1400 mm. Sa distribution géographique va du nord du Pérou au nord du Chili.

The systematics of the large sciaenids (corvina and robalos) from the temperate waters of Peru and Chile has been in a confused state for a long time (Hildebrand, 1946; Landa, 1952), a situation partly due to their general similarity and to the original assignment of these species to the then poorly defined Old World genus *Sciaena* Linnaeus, 1758. All the western South American species, formerly included in that genus are not related to the type species *Sciaena umbra* Linnaeus, 1758 as defined by Trewavas (1966), i.e. possessing a simple, carrot-shaped gas bladder, and an oval sagitta. The genus *Sciaena* is now considered monotypic and distributed on the eastern Atlantic coast from the English Channel to Senegal, and throughout the Mediterranean and Black Seas (Chao, 2002: 1637). Hence, a new generic allocation is required for all New World “*Sciaena*” species (Sasaki, 1989: 128).

All remaining nominal species (seven) ascribed to the genus *Sciaena* in the eastern Pacific are from Peru and Chile. Jordan and Eigenmann (1889) created a new subgenus of *Sciaena* to include *Corvina deliciosa* Tschudi, 1846. This subgenus, *Callaus* Jordan, 1889, should have been raised

to a generic rank, but it was never published. Schwarzhans (1993) placement of this taxon within the genus *Cheilotrema* Tschudi, 1846 was based purely on otolith morphology, which however is not supported by other morphological characteristics. The closely related *Sciaena callaensis* Hildebrand, 1946 is considered by Sasaki (1989) to be a sister species of *Sciaena deliciosa* (more likely a junior synonym, pers. obs.), and certainly belongs to the same (sub)genus. The types of *Sciaena suavis* de Buen, 1961 are lost, but Kong and Valdés (1990) consider this species to be a synonym of *S. deliciosa*. The status of *Sciaena peruana* Steindachner, 1903 remains unknown. Oyarzún *et al.* (1985) assigned *Sciaena gilberti* Abbott, 1899, locally known as “corvina”, to the genus *Cilus* Delfín, 1900. Among the most diagnostic characters of this latter genus is the presence of a peculiar gas bladder, bearing numerous appendages along the sides, and sagittae with a well-developed umbo on the centre of their outer face. The two other large sciaenids from the area, the locally called “robalos”, *Sciaena wieneri* Sauvage, 1883 and *Sciaena starksi* Evermann & Radcliffe, 1917 have not been reviewed as yet.

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In their revision of the sciaenids from America and Europe, Jordan and Eigenmann (1889) overlooked the recently described *Sciaena wieneri* Sauvage, 1883, despite the epistolary relations maintained by these authors. As far as we know, the first author to cite *S. wieneri* after its original description is Abbott (1899). As the description of Sauvage (1883) was rudimentary, Abbott (1899: 355) only cited a few differences with the type of *Sciaena gilberti*, syn. *Cilus gilberti* (Abbott, 1899). Starks (1906) made a more detailed comparison when describing *Sciaena gilberti*, syn. *Sciaena starksii*, and furnished the only existing illustration of the species, but he overlooked Abbott's work. Evermann and Radcliffe (1917) repeated Starks' comments. It seems that Hildebrand (1946) was the first to re-examine a specimen (USNM 120022) of what he assumed to be *S. wieneri*, obtained by M.J. Lobell in 1941 off Gunaípe Island (ca. 8°33' S), Peru. Hildebrand made a table of differences between the two species *S. starksii* and *S. wieneri*, giving new data (e.g. counts of gill rakers, relative length of dorsal-fin spines and soft rays, counts of scale rows between lateral line and first dorsal spine). These new data were accepted and reproduced by McPhail (1958) and Chirichigno (1974). Fowler (1945) was the only author to propose another taxonomic placement of the two species as *Johnius wieneri* and *J. starksii*. The genus *Johnius* Bloch, 1793, however, is restricted to the Indo-West Pacific region (Trewavas, 1977).

We herein propose to synonymise both nominal species referring to "robalo" and to assign the valid species *Sciaena wieneri* to a new genus – *Robaloscion*.

MATERIALS AND METHODS

Type material. - MNHN A-4852, holotype of *Sciaena wieneri*, 456 mm SL, C. Wiener, Peru; USNM 53464, holotype of *Sciaena starksii*, 382 mm SL, P.O. Simons, Callao, Peru; CAS SU 9589, paratype of *Sciaena starksii*, 247 mm SL, P.O. Simons, Callao, Peru.

Non-type material. - MNHN 2001-1365, *Sciaena starksii*, 308 mm SL, 16 Jul. 2000, P. Béarez, Chorrillos, Peru; USNM 120022, *Sciaena wieneri*, 837 mm SL, 1941, M.J. Lobell, Gunaípe Island, Peru; USNM 77731, *Sciaena starksii*, 391 mm SL, R.E. Coker, Ventanilla, Peru; LACM 23822, *Sciaena starksii*, 161 mm SL, 5 Feb. 1938, G.E. Myers, Callao, Peru.

Other material. - Otoliths of *Sciaena starksii*: # 5030, 331 mm SL, 24 Jul. 1998, P. Béarez, Huanchaco, Peru; # 5057, 827 mm SL, 12 Sep. 1998, P. Béarez, Lima public market, Peru; # 5153, 1030 mm SL, 19 Nov. 1999, P. Béarez, Vila-Vila, Peru; # 5166, 553 mm SL, 26 Feb. 2000, P. Béarez, Lima public market, Peru.

Other material cited in the literature by Bini and Tortorise (1955: 27) could not be retrieved at MSNG (G. Doria pers., com.).

The methodology used for counts and measurements follows Hubbs and Lagler (1947). Vertebral counts were made from X-rays and include the ural centrum. Gill raker (GR) counts do not include rudiments. All measurements are straight line and were taken with digital calipers and recorded to the nearest 0.1 millimeter. Common abbreviations are as follows: total length (TL); standard length (SL); head length (HL); lateral line (LL). Institutional abbreviations are those provided by Leviton *et al.* (1985).

Otolith measurements (Fig. 1A, B) were made with a camera lucida, following Schwarzhans (1993) and refer solely to the sagitta. Otolith length (l) is the greatest antero-posterior distance; otolith height (h) is the greatest dorso-ventral distance; otolith thickness (t) is the greatest thickness in lateral view; the curvature of the inner face (z) is the maximum distance of the ventral rim of the otolith to the tangential connecting anterior and posterior tips of the otolith; ostium length (ol) is the greatest distance from the anterior rim of the ostium to the posterior rim of the postostial lobe; ostium height (oh) is the greatest dorso-ventral height of the ostium; cauda length (cl) is measured from the upper (dorsal) ostial-caudal joint to the posterior-most extension of the cauda; length of proximal part of cauda (x) is measured from lower (ventral) ostial-caudal joint to the incursion of the ventral margin of the cauda at the turning point; height of cauda (y) is measured from the incursion of the ventral margin of the cauda at the turning point to the caudal tip. Calculations of different ratios follow Schwarzhans (1993): l:h; h:t; cl:ol; ol:oh, x:y (the caudal curvature index), and l:z (the curvature index of the inner face).

RESULTS

Robaloscion, new genus

Type species. - *Sciaena wieneri* Sauvage, 1883: 156.

Diagnosis

Robaloscion is distinguishable from all other sciaenid genera by the following combination of characters: gas bladder carrot-shaped, with a pair of blunt horn-like appendages arising at the antero-lateral corners of main chamber, projecting anteriorly; D X-I, 21-24; A II, 10; vertebral count 24-25 (11 + 13-14); posterior end of maxilla reaching or passing level of rear margin of eye; sagitta very elongate and almost rectangular in shape, bearing a massive umbo on its outer face (Fig. 1C-J); pseudobranchiae present; caudal fin emarginate to lunate.

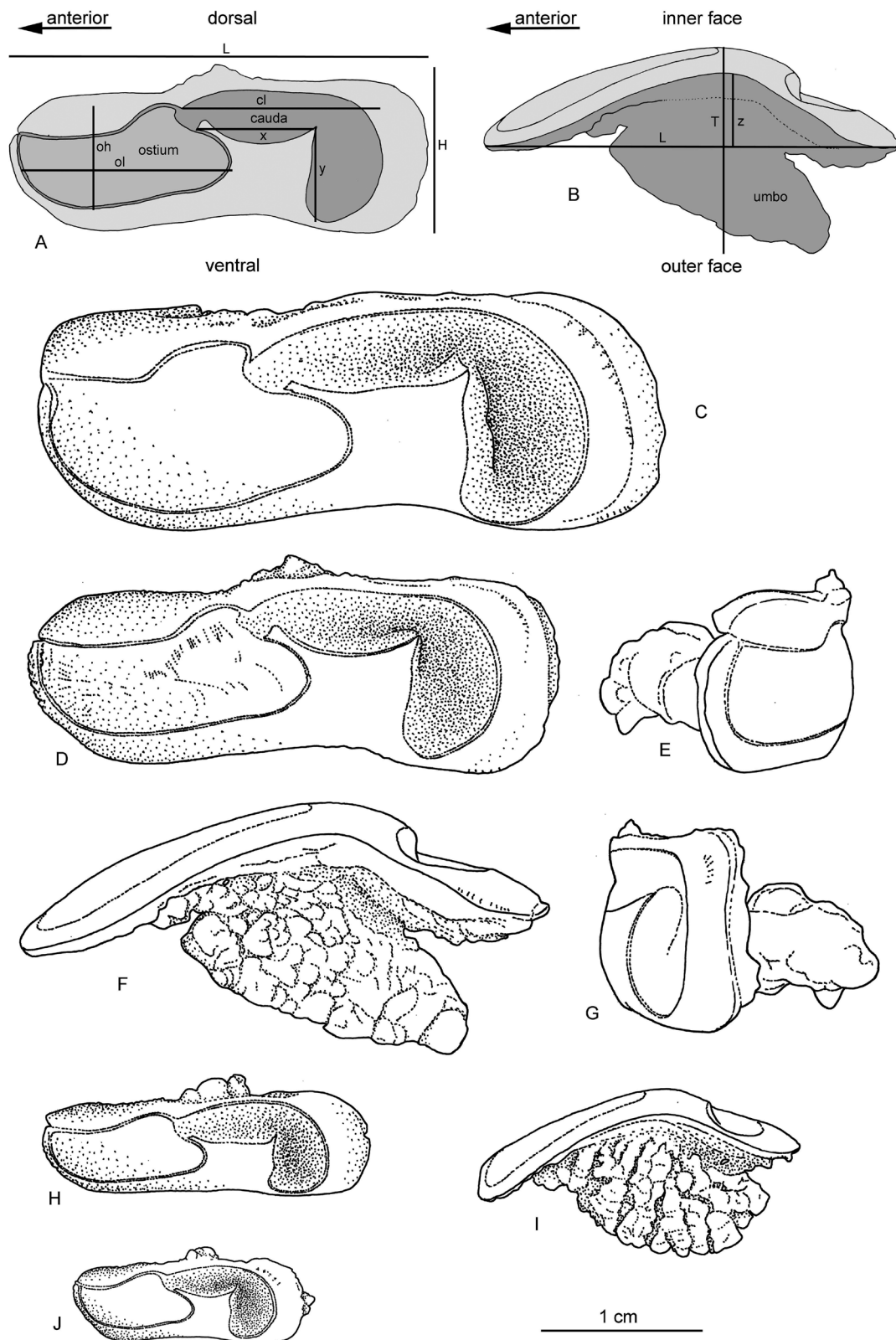


Figure 1. - Drawings of *Robaloscion wieneri* right sagittae. **A, B**: Schematic drawing of right sagitta, with measurements used for proportional ratios (see text for abbreviations, modified from Schwarzhans (1993). **C**: Medial view of # 5153. **D-G**: Medial, anterior, ventral, and posterior views of # 5057. **H, I**: Medial and ventral views of # 5166. **J**: Medial view of # 5030. Drawings by W. Schwarzhans.

Etymology

The new genus name *Robaloscion* is derived from the local Peruvian name “robalo” in use for fishes of the species *Sciaena wieneri*, and “scion”, a root commonly used since Gill (1861) in sciaenid generic names for its resemblance to *Sciaena* (drum). English common name proposed: robalo drum; French name: courbine de Wiener; Spanish name: robalo peruano.

The genus *Robaloscion* includes a single species:

Robaloscion wieneri (Sauvage, 1883) new combination (Figs 2, 3)

Diagnosis

Same as for genus.

Description

Morphometric and meristic data are presented in table I. Body elongate, moderately compressed, sub-cylindrical in transverse section. Maximum depth 3.5 to 4.2 in SL. Dorsal profile straight to slightly convex over the head. Head rather long, 3.2 to 3.4 in SL, and fairly low. Snout long, 3.4 to 4.1 in HL. Eye small, orbit diameter contained 6.4 (in young specimens) to 13.4 (in large adults) times in HL. Mouth

terminal, slightly oblique. Maxillary reaching to or beyond posterior margin of eye. Upper jaw with one external row of small conical teeth, slightly curved towards the interior of the mouth, and one internal band of villiform teeth (ca. 5 rows). Lower jaw with one internal row of small conical teeth, slightly curved towards the interior of the mouth, and one small external band of villiform teeth (ca. 2 rows). Gill rakers moderately developed, median ones distinctly shorter than gill filaments at angle of first gill arch, and becoming coarse with size - 8 to 10 on lower limb of first arch, total number on first arch 8-14. Preopercle with weak and broad indentations at margin, generally covered by skin and soft to touch.

Dorsal fin with 11(X+I) weak spines and 21-24 soft rays, third or fourth spine the longest. Anal fin short with 2 weak spines and 10 soft rays. Pectoral fin short, with 19 rays, not reaching tip of pelvic fin; 1.9 to 2.2 times in HL. Pelvic fin about the same length, 1.9 to 2.3 times in HL, its origin clearly behind that of pectoral fin. Caudal fin emarginate to lunate, with lobes of about equal length.

Body covered with ctenoid scales. Lateral line very slightly arched anteriorly with 75-78 pored scales to end of hypural plate, but extending to tip of caudal fin. Pored lateral-line scales with branching lateral-line canals and intercalated with smaller scales. Nine to ten lateral rows of scales



Figure 2. - Holotypes. **A:** *Sciaena wieneri* Sauvage, 1883, MNHN A-4852, 456 mm SL. **B:** *Sciaena starksi* Evermann & Radcliffe, 1917, USNM 53464, 382 mm SL.



Figure 3. - Fresh specimen of *Robaloscion wieneri*, MNHN 2001-1365, 308 mm SL. Photograph by P. Béarez.

Table I. - Morphometric and meristic characters of *Robaloscion wieneri* specimens. Measurements expressed as percentages of standard length. *: gill cover could not be opened, data taken from Hildebrand (1946)

	LACM 23822	CAS SU 9589 paratype <i>Sciaena starksi</i>	MNHN 2001- 1365	USNM 53464 holotype <i>Sciaena starksi</i>	USNM 77731	MNHN A-4852 holotype <i>Sciaena wieneri</i>	USNM 120022
TL	190	300	366	460	490	570	1000
SL	161	247	308	382	391	456	837
head length	30.6	30.2	29.0	31.2	29.4	29.5	31.2
body depth	24.0	26.2	25.5	28.6	24.8	24.6	26.3
snout length	7.5	8.0	8.4	7.8	8.3	8.8	8.4
orbit diameter	4.8	3.6	3.1	2.9	3.0	2.7	2.3
Interorbital distance	8.3	8.6	8.1	9.1	8.7	7.9	9.3
Upper-jaw length	12.7	12.2	11.5	11.9	12.6	12.2	12.1
Longest (3 rd or 4 th) dorsal-fin spine length	8.9	11.1	11.5	11.6	9.4	12.0	broken
2 nd anal-fin spine length	6.8	broken	7.3	broken	broken	broken	6.0
Pectoral-fin length	16.0	14.0	15.8	14.2	14.2	13.6	14.1
Pelvic-fin length	15.5	13.3	15.3	16.1	14.5	12.8	13.3
Caudal-peduncle length	23.5	21.3	23.6	19.7	22.8	23.0	22.9
Caudal-peduncle depth	9.8	9.2	10.6	10.4	9.0	9.1	9.6
Dorsal-fin rays	X-I, 22	X-I, 24	X-I, 22	X-I, 21	X-I, 23	X-I, 22	X-I, 23
Anal-fin rays	II, 10	II, 10	II, 10	II, 10	II, 10	II, 10	II, 10
Pectoral-fin rays	19	19	19	19	19	19	19
Lateral line scales	-	ca. 76	76	ca. 76	ca. 75	78	78
Gill-rakers	3 + 10	3 + 10	2 + 10	3 + 10	4 + 10 *	4 + 10	i + 8 *
Vertebrae	24 (11+13)	25 (11+14)	25 (11+14)	25 (11+14)	25 (11+14)	25 (11+14)	no X-ray
Scales above LL	10	10	9	10	9	9	-
Scales below LL	12	13	13	13	13	13	-

between lateral line and base of first dorsal spine. Twelve to thirteen rows of scales between lateral line and base of first anal spine.

Vertebral count 25 (11+14). Gas bladder carrot-shaped with an elongated posterior end, and a pair of stout and short, horn-like appendages at antero-lateral corners of main chamber, projecting anteriorly.

Description of sagitta otolith

Robaloscion wieneri probably possesses one of the biggest and most massive sagittae in the Sciaenidae. The sagitta is the only well developed otolith in this species (Fig. 1C-J); it is very elongate (l:h = 2.6-2.7) and massive (h:t = 0.7-0.8). Dorsal and ventral rims almost straight and nearly parallel; dorsal rim occasionally with slight mid-dorsal expansion in smaller otoliths; ventral rim slightly concave in middle section in larger otoliths. Anterior tip rounded, somewhat dorsally pronounced; posterior tip more quadrate, vertical or with weak ventral projection. Inner face convex with an curvature index (l:z) of 5.5. Sulcus typically hetero-sulcoid, tadpole-shaped, spread over most of inner surface. Ostium very long, covering the anterior half of sagitta, somewhat

depressed dorsally; ol:oh = 1.8-2.0, cl:ol = 0.9-1.1. Post-ostial lobe well developed, precaudal depression present, caudal joint oblique. Cauda very deep, with proximal part long and straight, parallel and close to dorsal edge; distal portion somewhat widened and curved downward at nearly 90°, marked by a sharp angle of its ventral margin. Index of horizontal part of cauda to downward curved part (x:y) 1.2-1.4. Outer face with massive central to post-centrally expanding umbo, made up of stalactite-like, spongy, concretionary aggregates that fuse together with growth. Posterior tip of otolith thicker than the anterior tip.

Coloration

Colour of body greyish, darker on back, with bluish reflections when fresh in small specimens, becoming bronze in large adults; belly silvery; sides with wavy dark grey to brown stripes. Pectoral and pelvic fins whitish; dorsal fin dusky; anal and ventral half of caudal fin orange. Axil of pectoral fin blackish on its dorsal half. Colour in ethanol, light brown with indistinct darker wavy markings on sides.

Size

A large-sized sciaenid, but precise information about its maximum size is scarce. Landa (1952) probably reported the largest size known from literature with a TL of 1400 mm. He did not record weight, but a male robalo caught at Camana (16°38' S) on 6 March 2000 with a TL of 1370 mm weighed 35 kg (C. M. Salazar, IMARPE, pers. com.).

Distribution

From Puerto Eten (06°56' S, northern Peru) to Arica (18°28' S, northern Chile) (Vargas and Peredo, 2001; pers. obs.). A record by Massay (1989) from shrimp ponds of southern Ecuador (03°25' S) is most likely erroneous.

DISCUSSION

Hildebrand (1946) was the first to compare in detail the two nominal species of Peruvian robalos. Because he compared two small specimens of *S. starksi* with a large *S. wieneri*, he was uncertain whether the two species were actually valid, but nevertheless gave a tabulation of differences (Hildebrand, 1946: 292). Landa (1952) agreed with Hildebrand's data, except for the position of the pelvic fins. The differences deemed most important by Hildebrand (1946) were: number of gill rakers on lower limb of first arch (10 vs. 8); number of oblique rows of scales between lateral line and first dorsal spine (9-10 vs. 7); dorsal longest soft ray shorter (vs. much longer) than longest spine; and eye contained 10 (vs. 13) times in head.

These discrepancies are due to several causes: Sauvage description is relatively poor and imprecise; the *Sciaena starksi* holotype has 24 vertebrae instead of 25; Hildebrand did not examine the holotype of *Sciaena wieneri*; sciaenids can have rather variable and allometric characters.

In his description of the new species *Sciaena wieneri*, Sauvage (1883) was not very precise. He stated that body depth was equal to head length when in fact HL is greater than the body depth (134.7 mm vs. 112 mm). He stated that body depth is contained 4.7 times in TL when in fact it is contained 5 times. In his count of the lateral-line scales, he included the scales covering the caudal fin.

The holotype of *Sciaena starksi* (USNM 53464) has 24 vertebrae instead of 25, having 13 caudal vertebrae instead of 14. This has a strong impact on the general morphology and might explain several features of the holotype: higher body depth, low number of dorsal soft rays, shorter caudal peduncle (Tab. I).

Based on examination of his large specimen of *S. wieneri* (USNM 120022), Hildebrand (1946) stated that the species had eight gill-rakers on the lower limb of the first arch and a few coarse tubercles on the upper limb, and seven oblique rows of scales above the lateral line. These characters were

then adopted by McPhail (1958) and Chirichigno (1974) to separate both species of robalos, and as a result only specimens of *S. starksi* have been recognized in Peruvian waters since then (N. Chirichigno, pers. com.; pers. obs.). None of these characters correspond to the holotype of *S. wieneri*, which likely is due to differences in sizes and individual variation.

Another character, the position of the pelvic fin relative to the pectoral, was disputed by Landa (1952). In fact both holotypes have the pelvic fin inserted behind the base of the pectoral fin (Fig. 2), but we assume that this character is somewhat variable.

Differences in eye size relative to HL of the two nominal species are due to strong negative allometry, the relative diameter of eye decreasing with body size (Tab. I).

Taking into consideration all these elements, we herein consider *Sciaena starksi* Evermann & Radcliffe, 1917 to be a junior synonym of *Robaloscion wieneri* (Sauvage, 1883).

Relationships

Sasaki (1989) considered *S. starksi* and *S. wieneri* as *incertae sedis* in Sciaenidae. It is not clear to which subfamily (*sensu* Sasaki, 1989) *Robaloscion wieneri* (Sauvage, 1883) may belong. On the basis of the shape of the gas bladder, the caudal fin, and the sagitta, it does not coincide with any of the tribes defined by Sasaki (1989). *Robaloscion wieneri* has more caudal than precaudal vertebrae, like *Cilus gilberti* and *Sciaena deliciosa* (11+14) and *Cheilotrema fasciatum* (10+15), and unlike *Cynoscion* or *Atractoscion* species, which usually have more precaudal than caudal vertebrae (13+12). In this respect, *R. wieneri* seems to be related to the Sciaeninae. The general appearance of *R. wieneri* and its otolith morphology point to *Cilus* as the most closely related genus. Otoliths of *Robaloscion* and *Cilus* both share the general shape and sulcus outline, and the central umbo on the outer face (though much less massive in *Cilus*). The main differences are that *Robaloscion* otoliths are more elongate and show a widened caudal tip (vs. not widened and bending forward) and the presence of a sharp angle of the ventral rim of the cauda at the turning point. However, this relation is not corroborated by the gas bladder morphology of the two genera. In *Robaloscion* the gas bladder resembles the *Cynoscion* pattern of Chao (1978), while in *Cilus* it bears numerous appendages along sides and hence resembles the *Pogonias* pattern.

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